

A 40-CASE SERIES OF ACUTE APPENDICITIS IN PREGNANCY, MATERNAL OUTCOMES AND THEIR MANAGEMENT IN A TERTIARY CENTRE IN NORTH KARNATAKA

Received : 20/04/2023
Received in revised form : 25/05/2023
Accepted : 20/06/2023

Keywords:

Acute Appendicitis, Pregnancy,
Maternal Outcomes Management.

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DOI: 10.47009/jamp.2023.5.3.438

Source of Support: Nil,
Conflict of Interest: None declared

Int J Acad Med Pharm
2023; 5(3); 2231-2235



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Abstract

Background: Acute Appendicitis is one of the most typical non obstetric emergencies. The majority of cases are seen in the second trimester. The clinical outcomes and presentation of Acute Appendicitis in pregnancy are not similar to that of non-pregnant women. **Objective:** To study the clinical, maternal, and fetal outcomes in pregnant patients who were diagnosed with acute Appendicitis. **Materials and Methods:** This is a case series of 40 pregnant patients diagnosed with Acute Appendicitis, irrespective of the gestational age, admitted and operated on in the Department of Obstetrics and Gynecology, Shri—B—M. Patil Medical College, Hospital and Research Center Vijayapura, Karnataka. **Results:** A total of 40 patients who met the inclusion criteria and who consented to the procedure and the study were included. The mean age of the admitted patients was 27.2 ± 2.73 years. Most of the patients were multigravida (72.5%) and primigravida (27.5%), and most were in their 2nd trimester. The presenting complaints are nausea (37.5%), vomiting (37.5%), Right Iliac Fossa (RIF) pain (40%), Right Upper Quadrant (RUQ) pain (50%), fever (32.5%) and anorexia (40%) and the symptoms seen were tachycardia, rebound tenderness, decreased bowel sound. In some patients, guarding was also noted. 80% of the individuals in our research showed high CRP. In 50% of the patients, leukocytosis was seen. 35 of the total 40 individuals had an acute appendicitis diagnosis based on an abdominal USG. On USG, one patient exhibited an appendicular mass. Among the 40 patients in our study, 35 were operated on, and 5 patients were treated conservatively. Among the 40 patients in our study, 70% had a normal vaginal delivery, and 30% underwent cesarean section due to obstetrical reasons. Among the patient, spontaneous abortion was seen in 20%, and preterm delivery in 10%. **Conclusion:** Acute Appendicitis is rare in pregnancy. With an early diagnosis and intervention, it can be managed successfully without any complications to the mother and fetus. It helps prevent complications of Appendicitis which have the potential for higher morbidity and mortality rates.

INTRODUCTION

Appendicitis in pregnant women should be considered separately from Appendicitis in the non-pregnant population due to the presence of the fetus and anatomical and physiological changes.^[1]

The possible causes include mechanical obstruction of the lumen, direct invasion of the pathogens causing the breakdown of the mucosal barrier, and inflammatory response to an infectious agent.^[2]

The main symptoms include vomiting, anorexia, nausea, pyrexia, tachycardia, and lower right quadrant pain. Pain in the right lower quadrant of

the abdomen is the commonest presentation in pregnancy at any gestational age. Appendicitis should be suspected in a pregnant woman when the patient complains of persistent abdominal pain, RIF/RUQ tenderness, nausea, vomiting and fever. In pregnancy, persistent abdominal discomfort, displacement of the appendix anatomically by the gravid uterus and physiological leukocytosis due to hemodilution make the diagnosis difficult and delayed as these factors obscure the classical signs of Appendicitis.^[3]

Maternal complications, adverse pregnancy outcomes like fetal loss, and preterm labor can occur when appendicular perforation or peritonitis sets in. Hence early diagnosis is essential for lowering the risk of perforation and the associated complications.^[4] Therefore, Conservative management is not preferred during pregnancy to avoid these complications, and prompt surgical intervention favors a better prognosis for both mother and the child. Postoperatively, signs of preterm labor, contractions and cervical dilatation should be carefully monitored depending on the gestational age.^[5]

Acute Appendicitis is one of the commonest Non-obstetrical emergencies, with an Incidence of 1 in 1000 pregnancies. It is 30% in 1st trimester, 45% in the second trimester, and 25% in 3rd trimester. Higher rates are seen in teenage than in older age groups.^[9]

Hence, the aim is to study the clinical, maternal, and fetal outcomes in pregnant patients diagnosed with acute Appendicitis.

MATERIALS AND METHODS

This is a case series of 40 Pregnant patients diagnosed with acute Appendicitis admitted and managed in the department of obstetrics and gynecology at a tertiary care center in Vijayapura, Karnataka. DURATION JANUARY 2021- DECEMBER 2022

Inclusion Criteria

1. Pregnant patients of any gestational age
2. Pregnant patients of any age group
3. Pregnant patients diagnosed with acute Appendicitis

Exclusion Criteria

1. Patients who were not willing to participate in the study
2. Patients with chronic Appendicitis.
3. Patients with known adnexal pathologies.

Valid written consent was taken from the patients after explaining the operative procedure and the study.

Data were collected with a pretested questionnaire that included sociodemographic details, clinical history, obstetric history, and presenting complaints, and proper clinical examination was done. All patients underwent investigations [CBC, C reactive protein (CRP), urine routine and USG abdomen].

Statistical Analysis

Data was entered in the excel spreadsheet. SPSS version 20. was used to perform the statistical analysis.

RESULTS

A total of 40 patients who met the inclusion criteria and had given consent were included. The mean age of the patients admitted with the diagnosis of acute Appendicitis and who underwent medical or surgical treatment was 27.2 ± 2.73 years.

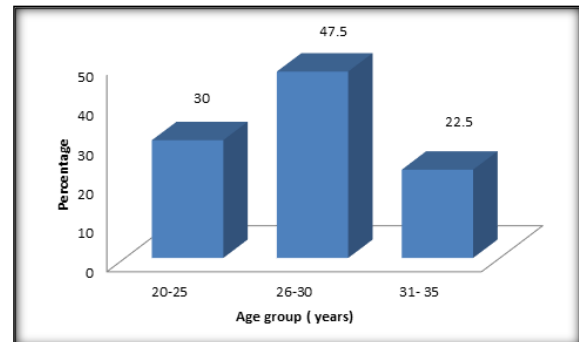


Figure 1: Bar diagram showing the distribution of age among the study subjects

29 patients were multigravida which was 72.5%, and primigravida, 11 of them, 27.5%.

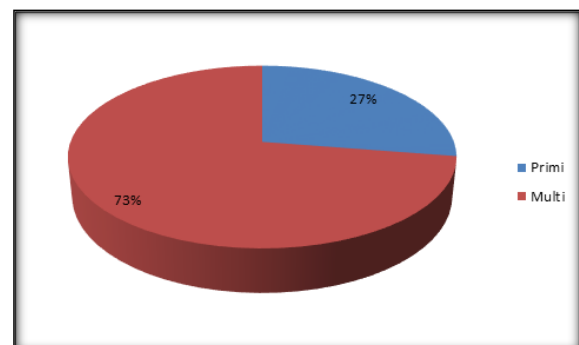


Figure 2: Pie diagram showing the distribution of primigravida and multigravida among the study subjects

26 patients presented in 2nd trimester (65%), 6 patients presented in 1st trimester (15%), and 8 patients came in 3rd trimester, which was 20%.

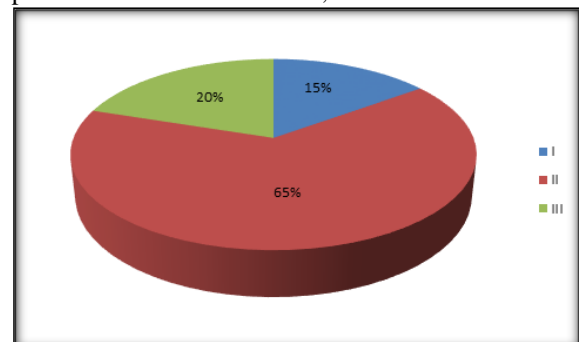


Figure 3: Pie diagram showing the distribution of study subjects according to trimesters

All the patients of 1st trimester had vomiting, and right iliac fossa pain, 4 of the 1st-trimester patients (66.67%) had nausea and fever, 5 of them (83.3%) had anorexia, and 1 patient in 1st trimester had bleeding pv. Among the 26 in 2nd trimester, six patients (23.08%) had nausea, vomiting and fever and 8 of them (30.7%) had right iliac fossa pain, and 16 of them (61.5%) had right upper quadrant pain, 9

of them (34.6%) had anorexia, diffuse pain was seen in 2 of them (7.6%), bleeding per vagina was noted in 3 of them (11.54%). Among the patients in the 3rd-trimester majority of them, 62.5% had nausea, 3 of them 37.5% had vomiting and fever, 2 of them 25% of them had right iliac fossa pain and anorexia, 4 of them 50% had right upper quadrant pain, diffuse pain was noted in one of them (12.5%).

Table 1: Distribution of study subjects according to trimester and symptoms

Symptoms	Trimester						Total (n-40)	
	I (n-6)		II (n-26)		III (n-8)		n	%
	n	%	n	%	n	%		
Nausea	4	66.67	6	23.08	5	62.5	15	37.5
Vomiting	6	100	6	23.08	3	37.5	15	37.5
RIF pain	6	100	8	30.77	2	25	16	40
RUQ pain	0	-	16	61.54	4	50	20	50
Diffuse pain	0	-	2	7.69	1	12.5	3	7.5
Fever	4	66.67	6	23.08	3	37.5	13	32.5
Anorexia	5	83.33	9	34.62	2	25	16	40
Bleeding PV	1	16.67	3	11.54	0	0	4	10

The majority of patients in 1st trimester, 83.3% (8 patients), had tachycardia, 4 of them 66.6% had rebound tenderness and guarding, one patient (16.6%) had an appendicular lump, decreased bowel sounds were noted in 2 of them (33.3%). Among the patients in the 2nd-trimester majority of them, 16 (61.54%) had rebound tenderness and decreased bowel sounds, 13 of them (50%) had tachycardia, and 9 of them (36.6%) had to guard. Among the patients in the 3rd-trimester majority of them, 75%, had rebound tenderness, 5 of them (62.5%) had tachycardia, 3 of them (37.5%) had to guard, and decreased bowel sounds were noted in 2 of them (25%).

Table 2: Distribution of study subjects according to trimesters and signs

Signs	Trimester						Total (n-40)	
	I (n-4)		II (n-26)		III (n-8)		n	%
	n	%	n	%	n	%		
Tachycardia	5	83.33	13	50.00	5	62.5	23	57.5
Rebound tenderness	4	66.67	16	61.54	6	75	26	65
Guarding	4	66.67	9	34.62	3	37.5	16	40
Appendicular lump	1	16.67	0	-	0	0	1	2.5
Decreased bowel sounds	2	33.33	16	61.54	2	25	20	50

Eighty percent of the individuals in our research showed high CRP. In 50% of the patients, leukocytosis was seen. Patients in the first trimester (66.67%) most frequently had a WBC count of 10000–160000. Leukocytosis \geq 16000 was present in 50% of third-trimester patients. In the third trimester, second trimester, and first trimester, patients had polymorphs $>$ 80% in 75%, 60%, and 66.67% of cases, respectively. Thirty percent of the patients (30%) had pyuria, and ten (33.33%) had bacteriuria. 35 of the total 40 individuals had an acute appendicitis diagnosis based on an abdominal USG. On USG, one patient exhibited an appendicular mass.

Among the 40 patients in our study, 35 were operated on, and 5 patients were treated conservatively. Among the five patients who were treated conservatively with IV antibiotics, all of them were in their 2nd trimester.

Among the 40 patients in our study, 70% of them had a normal vaginal delivery, 30% of them underwent cesarean section due to obstetrical reasons.

A bad obstetric outcome was seen in 8 patients (20%). Eight out of 40 patients (20%) had

spontaneous abortions. First-trimester appendectomy in 5 patients followed by spontaneous abortion, and three patients in the second trimester had an abortion after appendectomy. None of the patients in the third trimester had an abortion. Premature delivery was seen in 1 patient in the second trimester and three patients in the third trimester.

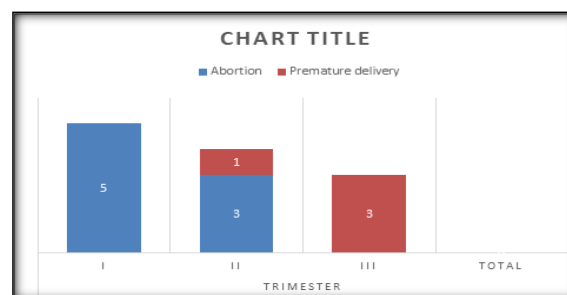
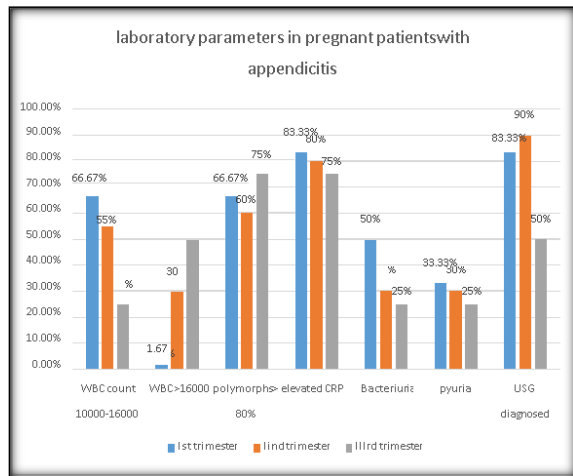


Figure 4: Bar diagram showing the distribution of study subjects according to trimesters and obstetric outcome

Table 3: Distribution of mode of delivery

Type of delivery	Frequency	Percentage
Normal vaginal delivery	28	70
Caesarean section	12	30
Total	40	100



DISCUSSION

Pregnancy and Appendicitis share similar symptomatology except for the classical signs, which require expertise for identification. Though rare, it affects approximately one in 1000 pregnancies. The incidence of Acute Appendicitis remains the same in pregnant and non-pregnant women. The peak incidence is usually seen in the 2nd and 3rd decades of life.

This study included 40 patients of age group 20-35 years and Mean age – 27.2 ± 2.73 years (25 years in a survey conducted by Mohammed F I and others) (29.7 Nakashima M and others). The majority of cases (65%) presented in the second trimester in this study which correlates with other studies (47% second trimester – Mohammed F I and others) (47% Nakashima M and others) (64.8% in the second trimester – Yavuz Y and others), where individual trimester patients had more incidence.

66.7% of patients in the first trimester and 62.5% in 3rd trimester had nausea. (69.7% of patients had vomiting and associated symptoms in a study by El Ghali and others), 83.33% of patients in the first trimester had anorexia. (76.47% in Mohammed F I and others).

100% of patients in the first trimester and 25% in 3rd trimester had RIF pain, and similar findings were observed in a study by El Ghali and others (78.8%).

The majority of patients in 2nd trimester (61.54%) developed RUQ pain which is on par with the findings of Mohammed F I and others (82.35%). Rebound tenderness was seen in 66.67%, 61.54% and 75% in the 1st, 2nd and 3rd trimesters, respectively, which correlates with the observations (82.35% in the 3rd-trimester study done by Mohammed F I).

Tachycardia was seen in 83.33%, 50% and 62.5% of patients in the 1st, 2nd and 3rd trimesters, respectively.

Guarding was seen in 66.67%, 34.62%, and 37.5% of patients in the 1st, 2nd and 3rd trimesters, respectively.

One case included in the study was one point of appendicular lump, which was managed conservatively.

In most patients with decreased bowel sounds, 61.54% were seen in 2nd trimester.

The most common differential diagnosis of acute Appendicitis in pregnancy is pyelonephritis

Among the patients included in the study, 8 patients had an abortion, and 4 patients had premature deliveries. (18% - Nakashima and others). 70% of the patients had a normal delivery, and 30% of the patients underwent caesarean sections.

CONCLUSION

Acute Appendicitis, though rare in pregnancy, is comparable to that in non-pregnant women. Clinical symptoms like Rebound tenderness, Right Iliac Fossa/Right Upper Quadrant pain with tachycardia, nausea, anorexia, guarding, and decreased bowel sounds when correlated with leukocytosis, raised CRP and confirmation with USG help in early diagnosis of the disease and early surgical intervention that will help in a better prognosis and reduction of morbidity and mortality to both mother and the neonate. Appendicular mass should be managed conservatively.

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